

DATE: Thursday, July 07, 2005

WEST

<u>Set</u> <u>Name</u> side by side	<u>Query</u>	<u>Hit</u> <u>Count</u>	<u>Set</u> <u>Name</u> result set
<i>DB=PGPB,USPT,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ</i>			
<u>L17</u>	L16 and (vector or plasmid or polynucleotide).clm.	11	<u>L17</u>
<u>L16</u>	L15 and (NGF and treat\$).clm.	15	<u>L16</u>
<u>L15</u>	L11 and (vector or plasmid)	267	<u>L15</u>
<u>L14</u>	L11 and polynucleotide	143	<u>L14</u>
<u>L13</u>	L12 and polynucleotide	61	<u>L13</u>
<u>L12</u>	L11 and lentivir\$	76	<u>L12</u>
<u>L11</u>	L10 and NGF	269	<u>L11</u>
<u>L10</u>	L9 and Alzheimer\$	410	<u>L10</u>
<u>L9</u>	L8 and gene therapy	1010	<u>L9</u>
<u>L8</u>	L5 and (neurotrophin or neurotrophic or NGF or nerve growth factor)	1261	<u>L8</u>
<u>L7</u>	L5 and (neurotrophin or neurotrophic)	597	<u>L7</u>
<u>L6</u>	L5 and NGF	738	<u>L6</u>
<u>L5</u>	L1 or L2 or L3 or L4	9903	<u>L5</u>
<u>L4</u>	424/93.21.ccls.	1747	<u>L4</u>
<u>L3</u>	424/93.2.ccls.	2018	<u>L3</u>
<u>L2</u>	424/93.1.ccls.	923	<u>L2</u>
<u>L1</u>	514/44.ccls.	7055	<u>L1</u>

END OF SEARCH HISTORY

Am2  
7/7/05

? ds

Set	Items	Description
S1	10874	ALZHEIMER? AND (NEUROTROPHIN OR NEUROTROPHIC OR NGF OR NERVE (W) GROWTH (W) FACTOR)
S2	352	S1 AND GENE (W) THERAPY
S3	251	RD (unique items)
S4	91	S3 AND CLINICAL
S5	37	S4 AND TRIAL
?		

Dialog

file: medicine

Amz

7/7/05

A specific clinical protocol for use toward therapy of defective, diseased and damaged cholinergic neurons in the mammalian brain, of particular usefulness for treatment of neurodegenerative conditions such as Alzheimer's disease. The protocol is practiced by delivering a definite concentration of recombinant neurotrophin into, or within close proximity of, identified defective, diseased or damaged brain cells. Using a viral vector, the concentration of neurotrophin delivered as part of a neurotrophic composition varies from  $10 \times 10^6$  to  $10 \times 10^{15}$  neurotrophin encoding viral particles/ml of composition fluid. Each delivery site receives from 2.5  $\mu\text{l}$  to 25  $\mu\text{l}$  of neurotrophic composition, delivered slowly, as in over a period of time ranging upwards of 10 minutes/delivery site. Each delivery site is at, or within 500  $\mu\text{m}$  of, a targeted cell, and no more than about 10 mm from another delivery site. Stable in situ neurotrophin expression can be achieved for 12 months, or longer.

17 Claims, 0 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMIC	Draw De
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	------	---------

☒ 5. Document ID: US 6171821 B1      Relevance Rank: 55

L12: Entry 18 of 21

File: USPT

Jan 9, 2001

US-PAT-NO: 6171821

DOCUMENT-IDENTIFIER: US 6171821 B1

TITLE: XIAP IRES and uses thereof

DATE-ISSUED: January 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Korneluk; Robert G.	Ottawa			CA
Holcik; Martin	Ottawa			CA
Liston; Peter	Ottawa			CA

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Apoptogen, Inc.	Ottawa			CA	03

APPL-NO: 09/ 332319      [PALM]

DATE FILED: June 14, 1999

PARENT-CASE:

CROSS REFERENCE TO RELATED APPLICATIONS This application is a continuation-in-part of U.S. Ser. No. 09/121,979, filed Jul. 24, 1998.

INT-CL: [07] C12 P 21/06, C12 P 19/34, C12 Q 1/68, C12 N 15/00, A61 K 48/00

US-CL-ISSUED: 435/69.1; 435/6, 435/91.1, 435/320.1, 435/325, 435/375, 536/24.1, 514/44

US-CL-CURRENT: 435/69.1; 435/320.1, 435/325, 435/375, 435/6, 435/91.1, 514/44, 536/24.1

FIELD-OF-SEARCH: 536/23.1, 536/24.5, 536/24.3, 536/24.33, 435/6, 435/91.1, 435/93.1, 435/320.1, 435/69.1

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5358856</u>	October 1994	Baltimore et al.	435/69.1

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 96/11211	April 1996	WO	
WO 97/06182	February 1997	WO	
WO 97/06255	February 1997	WO	
WO 97/26331	July 1997	WO	
WO 98/21321	May 1998	WO	
WO 98/22131	May 1998	WO	
WO 98/35693	August 1998	WO	

OTHER PUBLICATIONS

Farahani et al., "Mus Musculus X-linked Inhibitor of Apoptosis (Miap-3) mRNA, Complete CDs," Abstract, Genomics (1997) vol. 42, No. 5, 514-518.

Gurtu et al., "IRES Bicistronic Expression Vectors for Efficient Creation of Stable Mammalian Cell Lines," Biochemical and Biophysical Research Communications 229:295-298 (1996).

Holcik et al., "A New Internal-ribosome-entry-site Motif Potentiates XIAP-mediated Cytoprotection," Nature Cell Biology 1:190-192 (1999).

Le et al., "A Common RNA Structural Motif Involved in the Internal Initiation of Translation of Cellular mRNAs," Nucleic Acids Research 25:362-369 (1997).

Liston et al., "Human X-linked Inhibitor of Apoptosis Protein XIAP mRNA, Complete CDs," Abstract.

Andrea D. Branch, A good antisense molecule is hard to find, TIBS, 47-48, Feb. 1998.

Trisha Gura, Antisense Has Growing Pains, Science, pp. 575-575, Oct. 1995.

Stanley Crooke, Antisense '97: A roundtable on the state of the industry, Nature Biotechnology, p. 522, Jun. 1997.

Orkin et al., Report and recommendations of the panel to assess the NIH investment in research on gene therapy, pp. 1-23, Dec. 1995.

W. French Anderson, Human gene therapy, Nature, vol. 392, Supp, pp. 25-30, Feb. 1998.

Belsham, "Analysis of Picornavirus Internal Ribosome Entry Site Function in Vivo," In J.D. Richter (ed.), mRNA Formation and Function, Academic Press, New York, pp. 323-340 (1997).

Deveraux et al., "X-Linked IAP is a Direct Inhibitor of Cell-death Proteases," Nature 388:300-304 (1997).

Ehrenfeld, "Initiation of Translation by Picornavirus RNAs," In J.W.B. Hershey, M.B. Matthews and N. Sonenberg (eds.), Translational Control, Cold Spring Harbor Laboratory Press, Cold Spring Harbor Laboratory pp. 549-573 (1996).

Farahani et al., "Genomic Organization and Primary Characterization of miap-3: The Murine Homologue of Human X-linked IAP," Genomics 42:514-518 (1997).

- Gan et al., "Functional Characterization of the Internal Ribosome Entry Site of eIF4G mRNA," *J. Biol. Chem.* 273:5006-5012 (1998).
- Imataka et al., "A New Translational Regulator with Homology to Eukaryotic Translation Initiation Factor 4G," *EMBO J.* 16:817-825 (1997).
- Jackson, "A Comparative View of Initiation Site Selection Mechanisms," In J.W.B. Hershey, M.B. Matthews and N. Sonenberg (eds.), *Translational Control*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor Laboratory pp. 71-112 (1996).
- LaCasse et al., "The Inhibitors of Apoptosis (IAPs) and Their Emerging Role in Cancer," *Oncogene* 17:3247-3259 (1998).
- Levy-Strumpf et al., "DAP-5, a Novel Homolog of Eukaryotic Translation Initiation Factor 4G Isolated as a Putative Modulator of Gamma Interferon-Induced Programmed Cell Death," *Mol. Cell. Biol.* 17:1615-1625 (1997).
- Liston et al., "Genomic Characterization of the Mouse Inhibitor of Apoptosis Protein 1 and 2 Genes," *Genomics* 46:495-503 (1997).
- Liston et al., "Suppression of Apoptosis in Mammalian Cells by NAIP and a Related Family of IAP Genes," *Nature* 379:349-353 (1996).
- Liston et al., "Life and Death Decisions: The Role of the IAPs in Modulating Programmed Cell Death," *Apoptosis* 2:423-441 (1997).
- Macejak et al., "Internal Initiation of Translation Mediated by the 5' Leader of a Cellular mRNA," *Nature* 353:90-94 (1991).
- Meerovitch et al., "La Autoantigen Enhances and Corrects Aberrant Translation of Poliovirus RNA in Reticulocyte Lysate," *Journal of Virology* 67:3798-3807 (1993).
- Nanbru et al., "Alternative Translation of the Proto-Oncogene c-myc by an Internal Ribosome Entry Site," *J. Biol. Chem.* 272:32061-32066 (1997).
- Oh et al., "Homeotic Gene Antennapedia mRNA Contains 5'-Noncoding Sequences That Confer Translational Initiation by Internal Ribosome Binding," *Genes. Dev.* 6:1643-1653 (1992).
- Pelletier et al., "Internal Initiation of Translation of Eukaryotic mRNA Directed By a Sequence Derived From Poliovirus RNA," *Nature* 334:320-325 (1988).
- Rothe et al., "The TNFR2-TRAF Signaling Complex Contains Two Novel Proteins Related to Baculoviral Inhibitor of Apoptosis Proteins," *Cell* 83:1243-1252 (1995).
- Roy et al., "The Gene for Neuronal Apoptosis Inhibitory Protein is Partially Deleted in Individuals with Spinal Muscular Atrophy," *Cell* 80:167-178 (1995).
- Roy et al., "The c-IAP-1 and c-IAP-2 Proteins are Direct Inhibitors of Specific Caspases," *EMBO J.* 16:6914-6925 (1997).
- Sachs et al., "Starting at the Beginning, Middle, and End: Translation Initiation in Eukaryotes," *Cell* 89:831-838 (1997).
- Seshagiri et al., "Baculovirus Inhibitors of Apoptosis (IAPs) Block Activation of Sf-caspase-1," *Proc. Natl. Acad. Sci. USA* 94:13606-13611 (1997).
- Stein et al., "Translational of Vascular Endothelial Growth Factor mRNA by Internal Ribosome Entry: Implications for Translation Under Hypoxia," *Mol. Cell Biol.* 18:3112-3119 (1998).
- Stoneley et al., "C-Myc 5' Untranslated Region Contains an Internal Ribosome Entry Segment," *Oncogene* 16:423-428 (1998).
- Takahashi et al., "A Single BIR Domain of XIAP Sufficient for Inhibiting Caspases," *J. Biol. Chem.* 273:7787-7789 (1998).
- Trono et al., "Translation in Mammalian Cells of a Gene Linked to the Poliovirus 5' Noncoding Region," *Science* 241:445-448 (1988).
- Uren et al., "Cloning and Expression of Apoptosis Inhibitory Protein Homologs That Function to Inhibit Apoptosis and/or Bind Tumor Necrosis Factor Receptor-associated Factors," *Proc. Natl. Acad. Sci. USA* 93:4974-4978 (1996).
- Vagner et al., "Alternative Translation of Human Fibroblast Growth Factor 2 mRNA Occurs by Internal Entry of Ribosomes," *Mol. Cell Biol.* 15:35-44 (1995).
- Wagenknecht et al., "Expression and Biological Activity of X-linked Inhibitor of Apoptosis (XIAP) in Human Malignant Glioma," *Cell Death and Differentiation* 6:370-375 (1999).
- Ye et al., "Ultrabithorax and Antennapedia 5' Untranslated Regions Promote Developmentally Regulated Internal Translation Initiation," *Mol. Cell Biol.* 17:1714-1721 (1997).

ART-UNIT: 165

PRIMARY-EXAMINER: Elliott; George C.

ASSISTANT-EXAMINER: Epps; Janet L.

ATTY-AGENT-FIRM: Clark &amp; Elbing LLP Bierker-Brady; Kristina

## ABSTRACT:

The invention features purified nucleic acid encoding a novel internal ribosome entry site (IRES) sequence from the X-linked inhibitor of apoptosis (XIAP) gene. The invention also features methods for using the XIAP IRES to increase cap-independent translation of polypeptide coding sequences linked to the XIAP IRES, and methods for isolating compounds that modulate cap-independent translation.

29 Claims, 14 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWIC	Draw. D
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	------	---------

---

☒ 6. Document ID: US 20030096787 A1      Relevance Rank: 55

L12: Entry 4 of 21

File: PGPB

May 22, 2003

PGPUB-DOCUMENT-NUMBER: 20030096787

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030096787 A1

TITLE: Defective adenovirus vectors and use thereof in gene therapy

PUBLICATION-DATE: May 22, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Perricaudet, Michel	Ecrosnes		FR	
Vigne, Emmanuelle	Ivry-sur-Seine		FR	
Yeh, Patrice	Paris		FR	

APPL-NO: 10/ 301085    [PALM]

DATE FILED: November 21, 2002

## RELATED-US-APPL-DATA:

Application 10/301085 is a continuation-of US application 08/397225, filed March 28, 1995, PENDING

Application 08/397225 is a continuation-of US application PC/T/FR94/00851, filed July 8, 1994, UNKNOWN

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
FR	93/08596	1993FR-93/08596	July 13, 1993
FR	94/04590	1994FR-94/04590	April 18, 1994

INT-CL: [07] A61 K 48/00

US-CL-PUBLISHED: 514/44; 424/93.2

US-CL-CURRENT: 514/44; 424/93.2

REPRESENTATIVE-FIGURES: NONE

## ABSTRACT:

Novel adenovirus-derived viral vectors, the preparation thereof, and the use thereof in gene therapy, are disclosed.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Da
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

☒ 7. Document ID: US 5837694 A      Relevance Rank: 55

L12: Entry 20 of 21

File: USPT

Nov 17, 1998

US-PAT-NO: 5837694

DOCUMENT-IDENTIFIER: US 5837694 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Method for enhancing neurone survival and agents useful for same

DATE-ISSUED: November 17, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barrett; Graham Leslie	Northcote			AU

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
The Walter and Eliza Hall Institute of Medical Research					03	

APPL-NO: 08/ 633792      [PALM]

DATE FILED: July 1, 1996

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
AU	PM 1870	October 18, 1993

## PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE	102(E)-DATE
PCT/AU94/00631	October 18, 1994	WO95/11253	Apr 27, 1995	Jul 1, 1996	Jul 1, 1996

INT-CL: [06] A61 K 48/00, C07 H 71/04, C12 Q 1/68, C12 N 15/85

US-CL-ISSUED: 514/44; 435/6, 435/91.1, 435/325, 435/366, 435/375, 536/23.1,

536/24.31, 536/24.5

US-CL-CURRENT: 514/44; 435/325, 435/366, 435/375, 435/6, 435/91.1, 536/23.1,  
536/24.31, 536/24.5

FIELD-OF-SEARCH: 514/44, 536/23.1, 536/24.5, 536/24.31, 435/6, 435/91.1, 435/375,  
435/325, 435/366

PRIOR-ART-DISCLOSED:

#### U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5585479</u>	December 1996	Hoke et al.	536/24.5

#### OTHER PUBLICATIONS

Westermann et al., Inhibition of expression of SV-40 virus large T-antigen by antisense oligodeoxyribonucleotides, Biomed. Biochim. Acta, vol. 48(1), pp. 85-93, 1989.

James, Towards gene inhibition therapy: a review of progress and prospects in the field of antiviral antisense nucleic acids and ribozymes, Antiviral Chemistry and Chemotherapy, vol. 2(4), pp. 191-214, 1991.

Uhlmann et al., Antisense oligonucleotides: a new therapeutic principle, Chemical Reviews, vol. 90(4), pp. 543-584, Jun. 1990.

Weiss, Upping the antisense ante, scientist bet on profits from reverse genetics, Science News, vol. 139, pp. 108-109, Feb. 1991.

Tseng et al., Antisense oligonucleotide technology in the development of cancer therapeutics, Cancer Gene Therapy, vol. 1(1), pp. 65-71, Mar. 1994.

Gewirtz et al., Facility oligonucleotide delivery: helping antisense deliver on its promise, Proc. Natl. Acad. Sci., vol. 93, pp. 3161-3163, Apr. 1996.

Barrett et al., The p75 nerve growth factor receptor mediates survival of death depending on the stage of sensory neuron development, Proc. Natl. Acad. Sci., vol. 91, pp. 6501-6505, Jul. 1994.

Chao, M.V. et al. (1986) "Gene Transfer and Molecular Cloning of the Human NGF Receptor", Science 232:518-521.

Ross, Alonzo H. et al. (1991) "Nerve Growth Factor--Induced Differentiation of Human Neuroblastoma Cell Lines" Chem. Abstracts115:229, Abstract No. 151785d.

Wagner, R.W. (1994) "Gene Inhibition Using Antisense Oligodeoxynucleotides " Nature (372):333-335.

International Patent Application PCT/US93/08446 (Int. Publication No. Wo 94/06935).

ART-UNIT: 165

PRIMARY-EXAMINER: LeGuyander; John L.

ASSISTANT-EXAMINER: Wang; Andrew

ATTY-AGENT-FIRM: Scully, Scott, Murphy & Presser

#### ABSTRACT:

Antisense oligonucleotides to nerve growth factor receptor, p75.sup.NGFR gene downregulate expression, thereby facilitating neurone survival.

14 Claims, 14 Drawing figures



Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWAC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	------	--------

☒ 8. Document ID: US 6451306 B1 Relevance Rank: 55

L12: Entry 15 of 21

File: USPT

Sep 17, 2002

US-PAT-NO: 6451306

DOCUMENT-IDENTIFIER: US 6451306 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Methods for therapy of neurodegenerative disease of the brain

DATE-ISSUED: September 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tuszynski; Mark H.	La Jolla	CA		
Gage; Fred	La Jolla	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
The Regents of the University of California	Oakland	CA				02

APPL-NO: 09/ 060543 [PALM]

DATE FILED: April 15, 1998

INT-CL: [07] A01 N 63/00, A01 N 43/04, C12 N 15/00, C12 N 15/63

US-CL-ISSUED: 424/93.21; 424/93.2, 514/44, 435/320.1, 435/455

US-CL-CURRENT: 424/93.21; 424/93.2, 435/320.1, 435/455, 514/44

FIELD-OF-SEARCH: 514/44, 424/93.2, 424/93.21, 435/172.1, 435/455, 435/320.1

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5650148</u>	July 1997	Gage et al.	424/93.2
<u>5762926</u>	June 1998	Gage et al.	424/93.21

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 90/06757	June 1990	WO	

## OTHER PUBLICATIONS

Blesch et al., Clinical Neuroscience, vol. 3, p. 268-274, 1996.\*  
Yang et al., Journal of Neurotrauma, vol. 14(5), p. 281-297, May 1997.

ART-UNIT: 1632

PRIMARY-EXAMINER: Priebe; Scott D.

ASSISTANT-EXAMINER: Chen; Shin-Lin

ATTY-AGENT-FIRM: Foley & Lardner

## ABSTRACT:

The invention provides a specific protocol for use in grafting donor cells genetically modified to produce nerve growth factors into grafting sites within the cholinergic basal forebrain and is especially useful in treating neurodegenerative conditions such as Alzheimer's Disease. Grafting sites are selected for proximity to previously identified defective, diseased or damaged brain cells. Each graft is situated no more than about 550 .mu.m from a targeted cell and no more than about 5 mm from another graft. Depending on the size of the region to be treated, the number of grafting sites will vary upwards of 10 sites, with between 5 and 10 sites serving to deliver a therapeutically significant dosage of nerve growth factors to targeted cells. Donor cells are delivered in a composition concentration of at least 1.times.10.sup.5 cells/.mu.l, wherein each graft is comprised of between 2 and 20 .mu.l of the donor cell composition. The composition is delivered to each grafting site over a period of about 5-10 minutes.

12 Claims, 0 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	-----	--------

☐ 9. Document ID: US 6815431 B2      Relevance Rank: 55

L12: Entry 12 of 21

File: USPT

Nov 9, 2004

US-PAT-NO: 6815431

DOCUMENT-IDENTIFIER: US 6815431 B2

TITLE: Methods for therapy of neurodegenerative disease of the brain

DATE-ISSUED: November 9, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tuszynski; Mark H.	La Jolla	CA		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Regents of the University of California	Oakland	CA				02

APPL-NO: 10/ 032952      [PALM]

DATE FILED: October 26, 2001

PARENT-CASE:

RELATED U.S. PATENT APPLICATIONS This is a continuation-in-part of, and claims the priority of, U.S. patent application, Ser. No. 09/620,174 filed on Jul. 19, 2000, now U.S. Pat. No. 6,683,058, which in turns is a continuation in part of Ser. No. 09/060,543, filed on Apr. 15, 1998, now U.S. Pat. No. 6,451,306,

INT-CL: [07] A01 N 43/04, A01 N 63/00, C12 N 15/00, C12 N 15/63, C07 H 21/04

US-CL-ISSUED: 514/44; 435/320.1, 435/455, 424/93.2, 424/93.21, 536/23.5

US-CL-CURRENT: 514/44; 424/93.2, 424/93.21, 435/320.1, 435/455, 536/23.5

FIELD-OF-SEARCH: 435/320.1, 435/455, 424/93.2, 424/93.21, 514/44, 536/23.5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5082670</u>	January 1992	Gage et al.	424/520
<u>5529774</u>	June 1996	Barba et al.	424/93.21
<u>5650148</u>	July 1997	Gage et al.	424/93.2
<u>5683695</u>	November 1997	Shen et al.	424/185.1
<u>5756312</u>	May 1998	Weiner et al.	435/69.3
<u>5762926</u>	June 1998	Gage et al.	424/93.21

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 90/06757	June 1990	WO	

OTHER PUBLICATIONS

Deonarain, M., 1998, Exp. Opin. Ther. Patents, vol. 8, No. 1, p. 53-69.\*  
Eck et al., 1996, "Goodman & Gilman's The Pharmacological Basis of therapeutics", Ninth Edition, McGraw-Hill, New York, p. 77-101.\*  
Gorecki, D., 2001, Expert Opin. Emerging Drugs, vol. 6, No. 2, p. 1870198.\*  
Castro et al., 2001, Histol. Histopathol., vol. 16, p. 1225-1238.\*  
Armelin et al., "Pituitary extracts and steroid hormones in the control of 3T3 cell growth" Proc. Natl. Acad. Sci. (1973) 70:2702-6.  
Banerji et al., "Expression of a beta-globin gene is enhanced by remote SV40 DNA sequences" Cell (1981) 27:299-308.  
Benoist et al., "In vivo sequence requirements of the SV40 early promoter region" Nature (1981) 290:304-10.  
Blesch et al., "Ex vivo gene therapy for Alzheimer's disease and spinal cord injury" Clinical Neuroscience (1996) 3:268-274.  
Borsani et al., "cDNA sequence of human beta-NGF" Nucleic Acids Res. (1990) 18:4020.  
Breathnach et al., "Organization and expression of eucaryotic split genes coding for proteins" Ann. Rev. Biochem. (1981) 50:349-83.  
Chen et al., "Calcium phosphate-mediated gene transfer: a highly efficient transfection system for stably transforming cells with plasmid DNA" BioTechniques

(1988) 6:632-8.

Chen et al., "High-efficiency transformation of mammalian cells by plasmid DNA" Mol. Cell. Biol. (1987) 7:2745-52.

Chua et al., "Tumor necrosis factor-alpha induces mRNA for collagenase and TIMP in human skin fibroblasts" Connect. Tissue Res. (1990) 25:161-170.

Conner et al., "Distribution of NGF delivered into the rat CNS by either grafted NGF-secreting fibroblasts, intraparenchymal (IP) injections, or IP-infusions" Society for Neuroscience (1997) 23:53 Abstract 29.5.

Corden et al., "Promoter sequences of eukaryotic protein-coding genes." Science (1980) 209:1406-14.

DePamphilis et al., "Microinjecting DNA into mouse ova to study DNA replication and gene expression and to produce transgenic animals" BioTechniques (1988) 6:662-80.

de Wet et al., "The mRNAs for the pro-alpha 1(I) and pro-alpha 2(I) chains of type I procollagen are translated at the same rate in normal human fibroblasts and in fibroblasts from two variants of osteogenesis imperfecta with altered steady state ratios of the two mRNAs" J. Biol. Chem. (1983) 258:14385-9.

Elias et al., "Regulation of human lung fibroblast collagen production by recombinant interleukin-1, tumor necrosis factor, and interferon-gamma" Ann. N.Y. Acad. Sci. (1990) 580:233-244.

Felgner et al., "Cationic liposome mediated transfection" Proc. West. Pharmacol. Soc. (1989) 32:115-21.

Felgner et al., "Cationic liposome mediated transfection" Focus. (1989) 11:21-25.

Felgner et al., "Lipofection: a highly efficient, lipid-mediated DNA-transfection procedure" Proc. Natl. Acad. Sci. (1987) 84:7413-7.

Fraley et al., "New generation liposomes: the engineering of an efficient vehicle for intracellular delivery of nucleic acids" Trends Biochem. Sci. (1981) 6:77-80.

Fromm et al., "Deletion mapping of DNA regions required for SV40 early region promoter function in vivo" J. Mol. Appl. Genet. (1982) 1:457-81.

Gruss et al., "Simian virus 40 tandem repeated sequences as an element of the early promoter" Proc. Natl. Acad. Sci. (1981) 78:943-7.

Hefti et al., "Nerve growth factor and Alzheimer's disease" Ann. Neurol. (1986) 20:275-81.

Higgins et al., "NGF receptor gene expression is decreased in the nucleus basalis in Alzheimer's disease" Exp. Neurol. (1989) 106:222-36.

Horellou et al., "Adenovirus-mediated gene transfer to the central nervous system for Parkinson's Disease" Experimental Neurobiology (1997) 144:131-8.

Jolly et al., "Elements in the long terminal repeat of murine retroviruses enhance stable transformation by thymidine kinase gene" Nucleic Acids Res. (1983) 11:1855-1872.

Kobayashi et al., "Morphometric study on the CHS of the nucleus basalis of Meynert in Alzheimer's disease" Mol. Chem. Neuropathol. (1991) 15:193-206.

Kojima, et al., "Adenovirus-Mediated transduction with human glial cell line-derived neurotrophic factor gene prevents 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine-induced dopamine depletion in striatum of mouse brain," Biochemical and Biophysical Research Communications, 238:569-573 (1997).

Kordower et al., "The aged monkey basal forebrain: Rescue and sprouting of axotomized basal forebrain neurons after grafts of encapsulated cells secreting human nerve growth factor" Proc. Natl. Acad. Sci. (1994) 91:10898-10902.

Lehericy et al., "Heterogeneity and selectivity of the degeneration of cholinergic neurons in the basal forebrain of patients with Alzheimer's disease" J. Comp. Neurol. (1993) 330:15-31.

Levivier et al., "Intrastriatal implantation of fibroblasts genetically engineered to produce brain-derived neurotrophic factor prevents degeneration of dopaminergic neurons in a rat model of Parkinson's disease" The Jo. Of Neuroscience (1995) 15:7810-20.

Mannino et al., "Liposome mediated gene transfer" Biotechniques (1988) 6:682-90.

Maxam et al., "Sequencing end-labeled DNA with base-specific chemical cleavages" Methods in Enzymology (1980) 65:499-560.

McCutchan et al., "Enhancement of the infectivity of simian virus 40 deoxy ribonucleic acid with diethylaminoethyl dextran" J. Natl. Cancer Inst. (1968)

41:351-7.

Messing et al., "A system for shotgun DNA sequencing" *Nucleic Acids Res.* (1981) 9:309-21.

Mesulam et al., "Cholinergic innervation of cortex by the basal forebrain: cytochemistry and cortical connections of the septal area, diagonal band nuclei, nucleus basalis (substantia innominata), and hypothalamus in the rhesus monkey." *J. Comp. Neurol.* (1983) 214:170-197.

Moreau et al., "The SV40 72 base repair repeat has a striking effect on gene expression both in SV40 and other chimeric recombinants" *Nucleic Acids Res.* (1981) 9:6047-6068.

Mufson et al., "Loss of nerve growth factor receptor-containing neurons in Alzheimer's disease: A quantitative analysis across subregions of the basal forebrain" *Exp. Neurol.* (1989) 105:221-32.

Mufson et al., "Nerve growth factor receptor expressing human basal forebrain neurons: pathologic alterations in Alzheimer's and Parkinson's disease" *Prog. Clin. Biol. Res.* (1989) 317:401-14.

Palmer et al., "Genetically modified skin fibroblasts persist long after transplantation but gradually inactivate introduced genes" *Proc. Natl. Acad. Sci.* (1991) 88:1330-4.

Potter et al., "Electroporation in biology: methods, applications, and instrumentation" *Anal. Biochem.* (1988) 174:361-73.

Prockop et al., "Heritable diseases of collagen" *N. Eng. J. Med.* (1984) 311:376-86.

Raymon et al., "Application of ex vivo gene therapy in the treatment of Parkinson's disease" *Experimental Neurobiology* (1997) 144:82-91.

Roberts, et al., "Effects of NGF-Secreting Genetically Modified Cell Grafts on Cholinergic Neuronal Morphology and Cognition in Aged Primates," *Soc. For Neuroscience Abstracts*, 21(2):613.8 (1995).

Rossi et al., "Identification of a cell-specific transcriptional enhancer in the first intron of the mouse alpha 2 (type I) collagen gene" *Proc. Natl. Acad. Sci.* (1987) 84:5590-4.

Schmidt et al., "Regulation of a collagen promoter by the product of viral mos oncogene" *Nature* (1985) 314:286-9.

Seliger et al., "Gamma interferon regulates long terminal repeat-controlled oncogene expression in transformed mouse fibroblasts at the level of mRNA transcription" *J. Virology* (1988) 62:619-21.

Seliger et al., "Tumor necrosis factor-alpha affects LTR-controlled oncogene expression in transformed mouse fibroblasts at the post-transcriptional level" *J. Immunol.* (1988) 141:2138-44.

Shvaloff et al., "Lines of therapeutic research in Alzheimer's disease" *Psychopharmacology Bulletin* (1996) 32:343-52..

Smith et al., "Age-associated neuronal atrophy occurs in the primate brain and is reversible by growth factor gene therapy" *Proc. Natl. Acad. Sci.* (1999) 96:10893-8.

Smith et al., "Characterization of collagen synthesized by normal and chemically transformed rat liver epithelial cell lines" *Biochem.* (1980) 19:1820-5.

Toneguzzo et al., "Electric field-mediated DNA transfer: transient and stable gene expression in human and mouse lymphoid cells" *Molec. Cell. Biol.* (1986) 6:703-6.

Tuszynski et al., "Gene therapy in the adult primate brain: intraparenchymal grafts of cells genetically modified to produce nerve growth factor prevent cholinergic neuronal degeneration" *Gene Therapy* (1996) 3:305-14.

Tuszynski et al., "Recombinant human nerve growth factor infusions prevent cholinergic neuronal degeneration in the adult primate brain" *Ann.. Neurol.* (1991) 30:625-36.

Tuszynski et al., "Somatic gene therapy for nervous system disease" *Ciba Foundation Symposium 196, Growth factors as drugs for neurological and sensory disorder* (1996) 196:85-97.

Tuszynski et al., "Targeted Intraparenchymal Delivery of Human NGF by Gene Transfer to the Primate Basal Forebrain for 3 Months Does Not Accelerate .beta.-Amyloid Plaque Deposition," *Experimental Neurology* (1998) Article No. EN986956 1-10.

Tuszynski et al., "The chronically injured spinal cord exhibits responsiveness to NGF delivered locally by gene therapy" Society for Neuroscience (1995) 21:1562 Abstract 613.3.

Ullrich et al., "Human beta-nerve growth factor gene sequence highly homologous to that of a mouse" Nature (1983) 303:821-5.

Wolff et al., "Expression of retrovirally transduced genes in primary cultures of rat hepatocytes" Proc. Natl. Acad. Sci. (1987) 84:3344-8.

Yang, et al., "Gene Therapy for Central Nervous System Injury: The Use of Cationic Liposomes: An Invited Review," Journal of Neurotrauma, 14(5):281-297 (1997).

Zlokovic, et al., "Cellular and Molecular Neurosurgery: Pathways From Concept to Reality--Part II: Vector Systems and Delivery Methodologies for Gene Therapy of The Central Nervous System," Neurosurgery, 40(4):805-813 (1997).

Conner, et al., PNAS USA, 98:1941-1946 (2001).

von Bartheld, et al., Mol. Neurobiol., 24:1-28 (Humana Press, 2001).

Curtis, et al., Mol. and Cell. Neurosci., 12:105-118 (1998).

von Bartheld, et al., Letters to Nature, 379:830-833 (1996).

Sariola and Saarma, J. Cell Sci., 116:3855-3862 (2003).

Ebendal, J. Neurosci. Rsch., 32:461-470 (1992).

ART-UNIT: 1632

PRIMARY-EXAMINER: Chen; Shin-Lin

ATTY-AGENT-FIRM: Foley & Lardner, LLP

ABSTRACT:

A specific clinical protocol for use toward therapy of defective, diseased and damaged neurons in the mammalian brain, of particular usefulness for treatment of neurodegenerative conditions such as Parkinson's disease and Alzheimer's disease. The protocol is practiced by directly delivering a definite concentration of recombinant neurotrophin, into a targeted region of the brain using an expression vector. The neurotrophin is delivered to, or within close proximity of, identified defective, diseased or damaged brain cells. The method stimulates growth of targeted neurons, and reversal of functional deficits associated with the neurodegenerative disease being treated.

14 Claims, 7 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWIC	Draw. Des.
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	------	------------

☒ 10. Document ID: US 20030027779 A1 Relevance Rank: 55

L12: Entry 6 of 21

File: PGPB

Feb 6, 2003

PGPUB-DOCUMENT-NUMBER: 20030027779

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030027779 A1

TITLE: Method for inducing DNA synthesis in neurons

PUBLICATION-DATE: February 6, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
------	------	-------	---------	---------

Neuman, Toomas	Fort Collins	CO	US
Suda, Kikuo	Shizuoka	CO	JP
Nornes, Howard O.	Fort Collins		US

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	COUNTRY	TYPE CODE
Spinal Cord Society				02

APPL-NO: 10/ 057777 [PALM]

DATE FILED: January 25, 2002

## RELATED-US-APPL-DATA:

Application 10/057777 is a continuation-of US application 09/408508, filed September 30, 1999, US Patent No. 6372721

Application 09/408508 is a continuation-of US application 08/362495, filed November 18, 1996, US Patent No. 6087171

Application 08/362495 is a continuation-in-part-of US application 08/301416, filed September 8, 1994, ABANDONED

Application 08/301416 is a continuation-in-part-of US application 08/169522, filed December 17, 1993, ABANDONED

INT-CL: [07] A61 K 48/00, A61 K 9/127, C12 N 15/88

US-CL-PUBLISHED: 514/44; 435/458, 424/450

US-CL-CURRENT: 514/44; 424/450, 435/458

REPRESENTATIVE-FIGURES: NONE

## ABSTRACT:

A method is provided for inducing DNA synthesis in differentiated neurons. According to certain embodiments of the invention, a method for inducing DNA synthesis in a differentiated neuron is provided that includes obtaining a vector comprising nucleic acid encoding an E2F regulator and/or an E1A regulator, wherein the vector can be used to express the nucleic acid in a differentiated neuron, and transfecting a differentiated neuron with the vector. According to certain embodiments of the invention, a method for integrating DNA encoding a desired protein in a differentiated neuron is provided that includes obtaining a vector comprising nucleic acid encoding an E2F regulator and/or an E1A regulator, wherein the vector can be used to express the nucleic acid in a neuron, obtaining DNA encoding a desired protein, and cotransfecting a differentiated neuron with the vector and the DNA encoding the desired protein such that the DNA encoding the desired protein is integrated in the differentiated neuron and the desired protein is produced.

[0001] This application is a continuation of U.S. patent application Ser. No. 09/408,508 filed Sep. 30, 1999, now issued as U.S. Pat. No. \_\_\_\_\_, which is a continuation of U.S. patent application Ser. No. 08/362,495, which is a continuation-in-part of application Ser. No. 08/301,416, filed Sep. 8, 1994, abandoned, which is a continuation-in-part of application Ser. No. 08/169,522, filed Dec. 17, 1993, abandoned. In this continuation application and in the parent application, use of the term "E2F" is generic to all forms of E2F. In the present application and in the parent applications, the term Rb is used to represent p.sub.105.sup.Rb.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	--------

Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
-------	---------------------	-------	----------	-----------	---------------

Terms	Documents
L11 and NGF.clm.	21

Display Format:

[Previous Page](#)    [Next Page](#)    [Go to Doc#](#)



## Hit List

Clear

Generate Collection

Print

Fwd Refs

Bkwd Refs

Generate OACS

---

**Search Results - Record(s) 11 through 20 of 21 returned.**

---

☐ 11. Document ID: US 6551618 B2      Relevance Rank: 48

L12: Entry 14 of 21

File: USPT

Apr 22, 2003

US-PAT-NO: 6551618

DOCUMENT-IDENTIFIER: US 6551618 B2

TITLE: Compositions and methods for delivery of agents for neuronal regeneration and survival

DATE-ISSUED: April 22, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Baird; Andrew	San Diego	CA		
Gonzalez; Ana Maria	San Diego	CA		
Logan; Ann	Worcester			GB
Berry; Martin	Birmingham			GB

US-CL-CURRENT: 424/484; 424/468, 424/469, 424/486, 435/320.1, 435/455, 435/91.4, 514/44

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	ROC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	--	--------	-----	--------

---

☐ 12. Document ID: US 6096716 A      Relevance Rank: 48

L12: Entry 19 of 21

File: USPT

Aug 1, 2000

US-PAT-NO: 6096716

DOCUMENT-IDENTIFIER: US 6096716 A

TITLE: Liposome-mediated transfection of central nervous system cells

DATE-ISSUED: August 1, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hayes; Ronald L.	Houston	TX		
Yang; Keyi	Houston	TX		
Faustinella; Fabrizia	Houston	TX		

US-CL-CURRENT: [514/44](#); [424/520](#), [424/570](#), [435/320.1](#), [435/458](#), [435/69.1](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

---

☐ 13. Document ID: US 20010043920 A1      Relevance Rank: 46

L12: Entry 10 of 21

File: PGPB

Nov 22, 2001

PGPUB-DOCUMENT-NUMBER: 20010043920

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20010043920 A1

TITLE: Methods for modulation of the effects of aging on the primate brain

PUBLICATION-DATE: November 22, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Tuszynski, Mark H.	La Jolla	CA	US	
Blesch, Armin	San Diego	CA	US	

US-CL-CURRENT: [424/93.21](#); [514/44](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

---

☐ 14. Document ID: US 20030104995 A1      Relevance Rank: 43

L12: Entry 3 of 21

File: PGPB

Jun 5, 2003

PGPUB-DOCUMENT-NUMBER: 20030104995

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030104995 A1

TITLE: Neuroprotective methods and compositions

PUBLICATION-DATE: June 5, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Reilly, Jennifer Ott	Andover	MA	US	

US-CL-CURRENT: [514/12](#); [424/93.2](#), [514/44](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

---

☐ 15. Document ID: US 20020168338 A1      Relevance Rank: 43

L12: Entry 8 of 21

File: PGPB

Nov 14, 2002

PGPUB-DOCUMENT-NUMBER: 20020168338  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020168338 A1

TITLE: COMPOSITIONS AND METHODS FOR DELIVERY OF AGENTS FOR NEURONAL REGENERATION  
AND SURVIVAL

PUBLICATION-DATE: November 14, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
BAIRD, ANDREW			US	

US-CL-CURRENT: 424/93.2; 424/193.1, 424/423, 424/424, 424/425, 424/468, 424/469,  
424/486, 435/320.1, 514/44, 536/24.1, 536/24.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Dg
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

---

☐ 16. Document ID: US 20040138155 A1      Relevance Rank: 43

L12: Entry 1 of 21

File: PGPB

Jul 15, 2004

PGPUB-DOCUMENT-NUMBER: 20040138155  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20040138155 A1

TITLE: Devices containing DNA encoding neurotrophic agents and related compositions  
and methods

PUBLICATION-DATE: July 15, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Baird, Andrew	London	CA	GB	
Gonzalez, Ana Maria	San Diego		US	
Logan, Ann	Stourport on Severn		GB	
Berry, Martin	Edgbaston		GB	

US-CL-CURRENT: 514/44; 424/426

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Dg
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

---

☐ 17. Document ID: US 20010014476 A1      Relevance Rank: 42

L12: Entry 11 of 21

File: PGPB

Aug 16, 2001

PGPUB-DOCUMENT-NUMBER: 20010014476  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20010014476 A1

TITLE: CIRCULAR DNA MOLECULE WITH CONDITIONAL ORIGIN OF REPLICATION, METHOD FOR PREPARING THE SAME AND USE THEREOF IN GENE THERAPY

PUBLICATION-DATE: August 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
CROUZET, JOEL	SCEAUX		FR	
SOUBRIER, FABIENNE	THIAIS		FR	

US-CL-CURRENT: 435/455; 435/252.3, 435/252.33, 435/320.1, 435/325, 435/6, 435/91.4, 514/44, 536/23.1, 536/24.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Ds
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

☐ 18. Document ID: US 20020142299 A1 Relevance Rank: 42

L12: Entry 9 of 21

File: PGPB

Oct 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020142299  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020142299 A1

TITLE: PTD-modified proteins

PUBLICATION-DATE: October 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Davidson, Beverly L.	Iowa City	IA	US	
Mao, Qinwen	Iowa City	IA	US	
Xia, Haibin	Iowa City	IA	US	

US-CL-CURRENT: 435/6; 435/207, 435/366, 514/44, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Ds
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	---------

☐ 19. Document ID: US 6174869 B1 Relevance Rank: 41

L12: Entry 17 of 21

File: USPT

Jan 16, 2001

US-PAT-NO: 6174869  
DOCUMENT-IDENTIFIER: US 6174869 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Method for enhancing neurone survival and agents useful for same

DATE-ISSUED: January 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barrett; Graham Leslie	Northcote			AU

US-CL-CURRENT: 514/44; 435/325, 435/366, 435/375, 435/6, 435/91.1, 536/23.1,  
536/24.5

Full	Title	Citation	Front	Review	Classification	Date	Reference		Claims	KWIC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	--	--------	------	--------

☐ 20. Document ID: US 20030083301 A1      Relevance Rank: 41

L12: Entry 5 of 21

File: PGPB

May 1, 2003

PGPUB-DOCUMENT-NUMBER: 20030083301

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030083301 A1

TITLE: Therapeutic treatments for spinal cord injury via blockade of interleukin-1 receptor

PUBLICATION-DATE: May 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Perez-Polo, Regino	Galveston	TX	US	
Nesic, Olivera	Galveston	TX	US	

US-CL-CURRENT: 514/44; 435/455, 514/12

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	--------

Clear

Generate Collection

Print

Fwd Refs

Bkwd Refs

Generate OACS

Terms

Documents

L11 and NGF.clm.

21

Display Format: CIT

Change Format

[Previous Page](#)

[Next Page](#)

[Go to Doc#](#)

## Hit List

Clear

Generate Collection

Print

Fwd Refs

Bkwd Refs

Generate OACS

---

**Search Results - Record(s) 1 through 10 of 21 returned.**

---

- ☐ 1. Document ID: US 20020193335 A1      Relevance Rank: 71

**Using default format because multiple data bases are involved.**

L12: Entry 7 of 21

File: PGPB

Dec 19, 2002

PGPUB-DOCUMENT-NUMBER: 20020193335

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020193335 A1

TITLE: Gene therapy for neurological tissues

PUBLICATION-DATE: December 19, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hesson, David P.	Malvern	PA	US	
Frazer, Glen D.	Wynnewood	PA	US	
Shook, Bruce	Devon	PA	US	

US-CL-CURRENT: 514/44; 424/93.21

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Ds
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-----	---------

---

- ☐ 2. Document ID: US 5650148 A      Relevance Rank: 57

L12: Entry 21 of 21

File: USPT

Jul 22, 1997

US-PAT-NO: 5650148

DOCUMENT-IDENTIFIER: US 5650148 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Method of grafting genetically modified cells to treat defects, disease or damage of the central nervous system

DATE-ISSUED: July 22, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gage, Fred H.	La Jolla	CA		
Friedmann, Theodore	La Jolla	CA		

Rosenberg; Michael B.	San Diego	CA	
Wolff; Jon A.	Madison	WI	
Schinstine; Malcolm	San Diego	CA	
Kawaja; Michael D.	Toronto		CA
Ray; Jasodhara	San Diego	CA	

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP	CODE	COUNTRY	TYPE	CODE
The Regents of the University of California	Oakland	CA					02

APPL-NO: 08/ 209609 [PALM]

DATE FILED: March 10, 1994

## PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATIONS This application is a continuation of U.S. Ser. No. 792,894, filed Nov. 15, 1991, now abandoned which was is a continuation-in-part of patent application U.S. Ser. No. 285,196, filed Dec. 15, 1988, now U.S. Pat. No. 5,082,670, the entire disclosure of which is expressly incorporated by reference herein.

INT-CL: [06] A61 K 48/00, A61 K 31/00, C12 N 15/00, C12 N 5/00

US-CL-ISSUED: 424/93.2; 424/93.21, 435/172.3, 435/948, 514/44, 935/62, 935/70

US-CL-CURRENT: 424/93.2; 424/93.21, 435/948, 514/44

FIELD-OF-SEARCH: 424/93.21, 424/570, 435/172.3, 435/240.2, 435/948, 935/62, 935/70, 514/44

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4497796</u>	February 1985	Salser et al.	
<u>5082670</u>	January 1992	Gage et al.	424/520
<u>5399346</u>	March 1995	Anderson	

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0289034	April 1988	EP	
0334301	March 1989	EP	
0474979	November 1991	EP	
WOA8902468	March 1989	WO	
8902468	March 1989	WO	
8911539	November 1989	WO	
WOA9006757	June 1990	WO	
WOA9209688	June 1992	WO	

## OTHER PUBLICATIONS

- Gage et al., Neuroscience 22 Suppl:S590, Abstract #1766p (1987).
- Friedmann, T., "Implantation of Genetically Modified Cells into the Rat Brain an Approach to Restoration of CNA Functions," Gene Transfer and Gene Therapy, pp. 409-416 (1989) (Exhibit 1).
- Rosenberg, K. et al., "Introduction of New Genes into Adult Rat Brain Via Grafted Cells," Soc. Ns Abstracts 13:515 (Nov. 1987) 141.15 (Exhibit 2).
- Eldrup-Jorgensen, J., et al., "Antiplatelet Therapy and Vascular Grafts," Arch. Surg., 121:778-781 (1986) (Exhibit 3).
- Brems, J., et al., "A Five-Year Experience with the Bovine Heterograft for Vascular Access," Arch. Surg. 121:941-944 (1986) (Exhibit 4).
- Kojima, Y., et al., "Xenografts and Artificial Pancreas Transplantation," Transplantation Proceedings 19:981-983 (1987) (Exhibit 5).
- Reach, G., "Bioartificial Pancreas. Present State and Future Prospects," Biomed. Biochim. Acta, 43:569-576 (1984) (Exhibit 6).
- Brynitz, S., et al., "Post-Mortem Allogeneic Vein for Graft as Vascular Access in Chronic Haemodialysis," The Lancet, 900-901 (1988) (Exhibit 7).
- Marion et al., Brain Research 519: 133-143 (1990).
- Khillan, J.S., "Developmental and tissue-specific expression directed by the .alpha..sub.2 type 1 collagen promoter in transgenic mice," Proc. Natl. Acad. Sci. USA vol. 83, 725-729 (1986).
- Rosenstein, J.M., "Neocortical Transplants in the Mammalian Brain Lack a Blood-Brain Barrier to Macromolecules," Science, 235:772-774 (1987).
- Bjorklund, et al., in Neural Grafting in the Mammalian CNS, p. 709, Elsevier, Amsterdam (1985).
- Sladek, et al., in Neural Transplants: Development and Function, Plenum Press, New York, (1984).
- Marsden, "Movement disorders and the basal ganglia," Trends Neurosci., 9:512-515 (1986).
- Vinken, et al., Eds., "Drug-induced movement disorders (tardive dyskinesia and dopa-induced dyskinesia)," Handbook of Clinical Neurology, (Tanner, author), pp. 185-204, Elsevier, Amsterdam (1986); vol. 5.
- Backlund, et al., "Transplantation of adrenal medullary tissue to striatum in parkinsonism," J. Neurosurg., 62:169-173 (1985).
- Madrazo, et al., "Open Microsurgical Autograft of Adrenal Medulla To The Right Caudate Nucleus in Two Patients With Intractable Parkinson's Disease," New Eng. J. Med., 316:831-834 (1987).
- Bjorklund, et al., "Neural Grafting in Animal Models of Neurodegenerative Diseases," Ann. N.Y. Acad. Sci., 457:53-81 (1986).
- Dunnett, et al., "Dopamine-rich transplants in experimental parkinsonism," Trends Neurosci, 6:266-270 (1983).
- Gusella, et al., "A polymorphic DNA marker genetically linked to Huntington's disease," Nature, 306:234-238 (1983).
- Delabar, et al., "B Amyloid Gene Duplication in Alzheimer's Disease and Karyotypically Normal Down Syndrome," Science New York, 235:1390-1392 (1987).
- Goldgaber, et al., "Characterization and Chromosomal Localization of a cDNA Encoding Brain Amyloid of Alzheimer's Disease," Science N.Y., 235:877-880 (1987).
- St. George-Hyslop, et al., "The Genetic Defect Causing Familia Disease Maps on Chromosome 21," Science N.Y., 235:885-890 (1987).
- Tanzi, et al., "Amyloid B Protein Gene: cDNA, mRNA Distribution, and Genetic Linkage Near the Alzheimer Locus," Science N.Y., 235:880-884 (1987).
- Baron, et al., "Genetic linkage between X-chromosome markers and bipolar affective illness," Nature, 326:289-292 (1987).
- Sherrington, et al., "Localization of a susceptibility locus for schizophrenia on chromosome 5," Nature, 336:164-167 (1988).
- Anderson, "Prospects for Human Gene Therapy," Science, 226:401-409 (1984).
- Friedmann, et al., "Gene Therapy for Human Genetic Disease?" Science, 175:949-955 (1972).
- Friedmann, Gene Therapy: Fact and Fiction in Biology's New Approaches to Disease,



Cold Spring Harbor Laboratory, New York (1983).

Costantini, et al., "Correction of Murine B-Thalassemia by Gene Transfer into the Germ Line," *Science*, 233:1192-1194 (1986).

Mason, et al., "The Hypogonadal Mouse: Reproductive Functions Restored by Gene Therapy," *Science*, 234:1372-1378 (1986).

Readhead, et al., "Expression of a Myelin Basic Protein Gene in Transgenic Shiverer Mice: Correction of the Dysmyelinating Phenotype," *Cell*, 48:703-712 (1987).

Gilboa, et al., "Transfer and Expression of Cloned Genes Using Retroviral Vectors," *BioTechniques*, 4:504-512 (1986).

Shimotohno, et al., "Formation of Infectious Progeny Virus after Insertion of Herpes Simplex Thymidine Kinase Gene into DNA of an Avian Retrovirus," *Cell*, 26:67-77 (1981).

Wei, et al., "Construction and Isolation of a Transmissible Retrovirus Containing the src Gene of Harvey Murine Sarcoma Virus and the Thymidine Kinase Gene of Herpes Simplex Virus Type I," *J. Virol.*, 39:935-944 (1981).

Tabin, et al., "Adaptation of a Retrovirus as a Eucaryotic Vector Transmitting the Herpes Simplex Virus Thymidine Kinase Gene," *Cell Biol.*, 2:426-436 (1982).

Willis, et al., "Partial Phenotypic Correction of Human Lesch-Nyhan (Hypoxanthine-Guanine Phosphoribosyltransferase-deficient) Lymphoblasts with a Transmissible Retroviral Vector," *J. Biol. Chem.*, 259:7842-7849 (1984).

Kantoff, et al., "Correction of adenosine deaminase deficiency in cultured human T and B Cells by retrovirus-mediated gene transfer," *Proc. Natl. Acad. Sci. USA*, 83:6563-6567 (1986).

McIvor, et al., "Human Purine Nucleoside Phosphorylase and Adenosine Deaminase: Gene Transfer into Cultured Cells and Murine Hematopoietic Stem Cells by Using Recombinant Amphotropic Retroviruses," *Molec. Cell Biol.*, 7:838-846 (1987).

Soriano, et al., "Tissue-Specific and Ectopic Expression of Genes Introduced into Transgenic Mice by Retroviruses," *Science*, 234:1409-1413 (1986).

Wolff, et al., "Expression of retrovirally transduced genes in primary cultures of adult rat hepatocytes," *Proc. Natl. Acad. Sci. USA*, 83:3344-3348 (1987).

Khoury et al., "Enhancer Elements," *Cell*, 33:313-314 (1983).

Serfling, et al., "Enhancers and eukaryotic gene transcription," *Trends Genet.*, 1:224-230 (1985).

Wolff and Friedmann, "Approaches to Gene Therapy in Disorders of Purine Metabolism," *Rheumatic Dis. Clin. N. Amer.*, 14(2):459-477 (1988).

Eglitis and Anderson, "Retroviral Vectors for Introduction of Genes into Mammalian Cells," *BioTechniques*, 6:608-614 (1988).

Joyner, et al., "Retrovirus transfer of a bacterial gene into mouse haematopoietic progenitor cells," *Nature*, 305:556-558 (1983).

Miller, et al., "Expression of a Retrovirus Encoding Human HPRT in Mice," *Science*, 225:630-632 (1984).

Williams, et al., "Introduction of new genetic material into pluripotent haematopoietic stem cells of the mouse," *Nature*, 310:476-480 (1984).

Selden, et al., "Implantation of Genetically Engineered Fibroblasts into Mice: Implications for Gene Therapy," *Science*, 236:714-718 (1982).

Garver, et al., "Production of glycosylated physiologically normal human .alpha..sub.1 -antitrypsin by mouse fibroblasts modified by insertion of a human .alpha..sub.1 -antitrypsin cDNA using a retroviral vector," *Proc. Nat. Acad. Sci. USA*, 84:1050-1054 (1987).

St. Louis et al., "An alternative approach to somatic cell gene therapy," *Proc. Nat. Acad. Sci. USA*, 85:3150-3154 (1988).

Morgan, et al., "Expression of an Exogenous Growth Hormone Gene by Transplantable Human Epidermal Cells," *Science*, 237:1476-1479 (1987).

Geller et al., "A defective HSV-1 Vector Expresses Escherichia coli .beta.-Galactosidase in Cultured Peripheral Neurons," *Science*, 241:1667-1669 (1988).

Lowenstein, "Junctional Intercellular Communication and the Control of Growth," *Biochem. Biophys. Acta.*, 560:1-65 (1979).

Gruber, et al., "Glial cells metabolically cooperate: A potential requirement for gene replacement therapy," *Proc. Natl. Acad. Sci. USA*, 82:6662-6666 (1985).

Hefti, "Nerve Growth Factor Promotes Survival of Septal Cholinergic Neurons After

- Fimbrial Transections," J. Neuroscience, 6(8):2155-2162 (1986).
- Williams, et al., "Continuous infusion of nerve growth factor prevents basal forebrain neuronal death after fimbria fornix transection," Proc. Natl. Acad. Sci. USA, 83:9231-9235 (1986).
- Gage, et al., "Retrograde Cell Changes in Medial Septum and Diagonal Band Following Fimbria-Fornix Transection: Quantitative Temporal Analysis," Neuroscience, 19:241-255 (1986).
- Korshing and Thoenen, "Nerve growth factor in sympathetic ganglia and corresponding target organs of the rat: Correlation with density of sympathetic innervation," Proc. Natl. Acad. Sci. USA, 80:3513-3516 (1983).
- Whittemore, et al., "Developmental and regional expression of B nerve growth factor messenger RNA and protein in the rat central nervous system," Proc. Natl. Acad. Sci. USA, 83:817-821 (1986).
- Shelton and Reichardt, "Studies on the expression of the B nerve growth factor (NGF) gene in the central nervous system: Level and regional distribution of NGF mRNA suggest that NGF functions as a trophic factor for several distinct populations of neurons," Proc. Natl. Acad. Sci. USA, 83:2714-1718 (1986).
- Larkfors, et al., "Nerve Growth Factor Protein Level Increases in the Adult Rat Hippocampus After a Specific Cholinergic Lesion," J. Neuroscience Res., 18:525-531 (1987).
- Seiler and Schwab, "Specific Retrograde Transport of Nerve Growth Factor (NGF) from Neocortex to Nucleus Basalis in the Rat," Brain Res., 300:33-39 (1984).
- Kromer, "Nerve Growth Factor Treatment After Brain Injury Prevents Neuronal Death," Science, 235:214-216 (1987).
- Silver et al., "Axonal Guidance During Development of the Great Cerebral Commissures: Descriptive and Experimental Studies, in Vivo, on the Role of Preformed Glial Pathways," J. Comp. Neurol. 210:10-29 (1982).
- David and Aguayo, "Axonal Elongation into Peripheral Nervous System 'Bridges' After Central Nervous System Injury in Adult Rats", Science 214:931-933 (1981).
- Wendt et al., "Regeneration of Rat Hippocampal Fimbria Fibers after Fimbria Transection and Peripheral Nerve or Fetal Hippocampal Implantation", Exp. Neurol. 79:452-461 (1983).
- Kromer and Cornbrooks, "Transplants of Schwann Cell Cultures Promote Axonal Regeneration in the Adult Mammalian Brain", Proc. Natl. Acad. Sci. 82:6330-6334 (1985).
- Kromer et al., "Innervation of Embryonic Hippocampal Implants by Regenerating Axons of Cholinergic Septal Neurons in the Adult Rat", Brain Res. 210:153-171 (1980).
- Gage et al., "Human Amnion Membrane Matrix as a Substratum for Axonal Regeneration in the Central Nervous System", Exp. Brain Res. 72:371-380 (1988).
- Wendt, "ACHe-Positive Fiber Growth After Hippocampal Fimbria Transection and Peripheral Nerve Homogenate Implantation", Brain Res. Bull. 15:13-18 (1985).
- Yee et al., "Gene Expression from a Transcriptionally Disabled Retroviral Vector", Cold Spring Harb. Symp. on Quant. Biol. vol. LI, 1021-1026 (1986).
- Jolly et al., "High-Efficiency Gene Transfer into Cells", Meth. in Enzym. 149:10-25 (1987).
- Miller et al., "Generation of Helper-Free Amphotropic Retroviruses That Transduce a Dominant-Acting, Methotrexate-Resistant Dihydrofolate Reductase Gene", Mol. Cell. Biol. 5:431-437 (1985).
- Palmer et al., "Genetically modified skin fibroblasts persist long after transplantation but gradually inactivate introduced genes", Proc. Natl. Acad. Sci. 88:1330-1334 (1991).
- Banerji et al., "Expression of a B-Globin Gene Is Enhanced by Remote SV40 DNA Sequences", Cell. 27:299-308 (1981).
- Jolly et al., "Elements in the long terminal repeat of murine retroviruses enhance stable transformation by thymidine kinase gene", Nucleic Acids Res. 11:1855-1872 (1983).
- Schmidt et al., "Regulation of a collagen gene promoter by the product of viral mos oncogene", Nature 314:286-289 (1985).
- Rossi and de Crombrughe, "Identification of a cell-specific transcriptional enhancer in the first intron of the mouse .alpha..sub.2 (type I) collagen gene",

- Proc. Natl. Acad. Sci. USA 84:5590-5594 (1987).
- Prockop and Kivirikko, "Heritable Diseases of Collagen", N. Eng. J. Med. 311:376-386 (1984).
- Smith and Niles, "Characterization of Collagen Synthesized by Normal and Chemically Transformed Rat Liver Epithelial Cell Lines", Biochem. 19:1820-1825 (1980).
- de Wet et al., "The mRNAs for the Pro .alpha.1(I) and Pro-.alpha.2(I) Chains of Type I Procollagen Are Translated at the Same Rate in Normal Human Fibroblasts and in Fibroblasts from Two Variants of Osteogenesis Imperfecta with Altered Steady State Ratios of the Two MRNAs", J. of Biol. Chem. 258:14385-14389 (1983).
- Armelin, "Pituitary Extracts and Steroid Hormones in the Control of 3T3 Cell Growth", Proc. Natl. Acad. Sci. 70(9):2702-2706 (1973).
- Gruss et al., "Simian Virus 40 Tandem Repeated Sequences as an Element of the Early Promoter", Proc. Natl. Acad. Sci. 78(2):943-947 (1981).
- Benoist & Chambon, "In Vivo Sequence Requirements of the SV40 Early Promoter Region", Nature vol. 290:304-310 (1981).
- Fromm and Berg, "Deletion Mapping of DNA Regions Required for SV40 Early Region Promoter Function In Vivo", J. Mol. Appl. Gen. 1(5):457-481 (1982).
- Moreau et al., "The SV40 72 Base Repair Repeat has a Striking Effect on Gene Expression both in SV40 and Other Chimeric Recombinants", Nucl. Acids Res. 9 (22):6047-6068 (1981).
- Xu et al., "Comparison of Enhancer Functions in Simian Virus 40 and Rous Sarcoma Virus", Enhancer and Eukaryotic Gene Expression, Cold Spring Harbor Labs, Cold Spring Harbor, NY, pp. 51-54 (1983).
- Chua and Chua, "Tumor Necrosis Factor-.alpha. Induces mRNA for Collagenase and Timp in Human Skin Fibroblasts", Conn. Tissue Res. 25:161-170 (1990).
- Elias et al., "Regulation of Human Lung Fibroblast Collagen Production by Recombinant Interleukin-1, Tumor Necrosis Factor, and Interferon-", Annals NY Acad. Sci. 580 233-244 (1990).
- Seliger et al, "Tumor Necrosis Factor-.alpha. Affects LTR-Controlled Oncogene Expression in Transformed Mouse Fibroblasts at the Post-Transcriptional Level", J. Immunol. 141:2138-2144 (1988).
- Seliger et al., "Gamma Interferon Regulates Long Terminal Repeat-Controlled Oncogene Expression in Transformed Mouse Fibroblasts at the Level of mRNA Transcription", J. Virology 62:619-621 (1988).
- Cattaneo and McKay, "Proliferation and Differentiation of Neuronal Stem Cells Regulated by Nerve Growth Factor", Nature 347:762-765 (1990).
- Das, "Intraparenchymal Transplantation", Neural Grafting in the Mammalian CNS, Bjorklund and Stenevi, eds., Ch. 3, pp. 23-30 (1985).
- Freed, "Transplantation of Tissues to the Cerebral Ventricles: Methodological Details and Rate of Graft Survival", Neural Grafting in the Mammalian CNS, Bjorklund and Stenevi, eds., Ch. 4, pp. 31-40 (1985).
- Brundin et al., "Intracerebral Grafts of Neuronal Cell Suspensions", Neural Grafting in the Mammalian CNS, Bjorklund and Stenevi, eds. Ch. 6, pp. 41-50 (1985).
- David et al., "Peripheral Nerve Transplantation Techniques to Study Axonal Regeneration from the CNS of Adult Mammals", Neural Grafting in the Mammalian CNS, Bjorklund and Stenevi, eds., Ch. 7, pp. 61-70 (1985).
- Gage et al., "Astrocytes are Important for Sprouting in the Septohippocampal Circuit", Exp. Neurol. 102:2-13 (1988).
- Wolf et al., "Retrovirus-Mediated Gene Transfer of Beta-nerve Growth Factor into Mouse Pituitary Line AtT-20", Mol. Biol. Med. 5:43-59 (1988).
- Gage et al., "Reinnervation of the Partially Deafferented Hippocampus by Compensatory Collateral Sprouting from Spared Cholinergic and Noradrenergic Afferents", Brain Res., 268:27-37 (1983).
- Imamoto and Leblond, "Presence of Labeled Monocytes, Macrophages and Microglia in a Stab Wound of the Brain Following an Injection of Bone Marrow Cells Labeled with .sup.3 H-Uridine Into Rats", J. Comp. Neur., 174:255-279 (1977).
- Robinson et al., "Macrophage Heterogeneity in the Rat as Delineated by Two Monoclonal Antibodies MRC OX-41 and MRC OX-42", the Latter Recognizing Complement Receptor Type 3, Immunol. 57:239-247 (1986).

- Stenevi et al., "Transplantation of Central and Peripheral Monoamine Neurons to the Adult Rat Brain: Techniques and Conditions for Survival", *Brain Res.* 114:1-20 (1976).
- Rosenstein and Brightman, "Alterations of the Blood-Brain Barrier After Transplantation of Autonomic Ganglia into the Mammalian Central Nervous System", *J. Comp. Neurol.* 250:339-351 (1986).
- Gibbs, et al., "Transplantation of Septal Neurons Maintained in Long-Term Culture", *Brain Res.*, 382:409-415 (1986).
- Coyle and Schwarcz, "Lesion of Striatal Neurones with Kainic Acid Provides a Model for Huntington's Chorea", *Nature*, 263:244-246 (1976).
- Dean et al., "Regulation of c-myc Transcription and mRNA Abundance by Serum Growth Factors and Cell Contact", *J. Biol. Chem.* 261:9161-9166 (1986).
- Freed and Cannon-Spoor, "Cortical Lesions Interfere with Behavioral Recovery from Unilateral Substantial Nigra Lesions Induced by Brain Grafts", *Behav. Brain Res.* 32:279-288 (1989).
- Fonnum, "A Rapid Radiochemical Method for the Determination of Choline Acetyltransferase", *J. Neurochem.* 24:407-409 (1975).
- Berrard et al., "cDNA Cloning and Complete Sequence of Porcine Choline Acetyltransferase: In vitro Translation of the Corresponding RNA Yields an Active Protein", *Proc. Natl. Acad. Sci.* 84:9280-9284 (1987).
- Horellou et al., "In Vivo Release of DOPA and Dopamine from Genetically Engineered Cells Grafted to the Denervated Rat Striatum", *Neuron* 5:393-402 (1990).
- Wolff et al., "Grafting Fibroblasts Genetically Modified to Produce L-Dopa in a Rat Model of Parkinson Disease", *Proc. Natl. Acad. Sci.* 86:9011-9014 (1989).
- Fisher et al., "Survival and Function of Intrastratially Grafted Primary Fibroblasts Genetically Modified to Produce L-Dopa", *Neuron* 6:371-380 (1991).
- Cohen and Wurtman, "Brain Acetylcholine: Increase After Systemic Choline Administration", *Life Sci.* 16:1095-1102 (1975).
- Chen et al., "Cellular Replacement Therapy for Neurologic Disorders: Potential of Genetically Engineered Cells", *J. Cell. Biochem.*, 45:252-257 (1991).
- Gorman et al., "The Rous Sarcoma Virus Long Terminal Repeat is a Strong Promoter When Introduced into a Variety of Eukaryotic Cells by DNA-Mediated Transfection", *Proc. Natl. Acad. Sci.* 79:6777-6781 (1982).
- de Crombrughe and Schmidt, "Structure and Expression of Collagen Genes", *Meth. in Enzymol.*, 144:61-74 (1987).
- Thompson et al., "Methylation-Dependent Transcription Repression of Human Pro- $\alpha_1(I)$  Collagen Gene", *Annals. NY Acad. Sci.* 580:456-458 (1990).
- Sleigh, "A Nonchromatographic Assay for Expression of the Chloramphenicol Acetyltransferase Gene in Eucaryotic Cells" *Anal. Biochem.*, 156:251-256 (1986).
- Kawaja and Gage, "Nerve Growth Factor Receptor Immunoreactivity in the Rat Septohippocampal Pathway: A Light and Electron Microscope Investigation", *J. Comp. Neurology* 307:517-529 (1991).
- Clarke et al., "Formation of Cholinergic Synapses by Intrahippocampal Septal Grafts as Revealed by Choline Acetyltransferase Immunocytochemistry", *Brain Res.* 369:151-162 (1986).
- Short et al., "Autocrine Differentiation of Rat Phenochromocytoma PC12 Cells Using a Retroviral NGF Vector", *Society of Neuroscience Abstracts*, Abstract No. 448.12, 14:1115 (1988).
- Friedman et al., "Fate and Gene Expression in Retrovirally-Infected Cells Grafted to the Rat Brain"; *J. Cell. Biochem. Abstract No. H009; vol. Suppl. 0 (12 Part B)*, p. 163 (1988).
- Breakefield et al., "Retroviral Gene Transfer of Beta-Nerve Growth Factor into Cultured Cells", *J. Cell. Biochem. Abstract No. H102; vol. Suppl. 0 (12 Part B)*, p. 170 (1988).
- Gage et al., "Grafting of Genetically Engineered Cells to the Adult Rat Brain", *Neurosci.*, Abstract No. 1766P; 22:S590 (1987).
- Gage et al., "Grafting Genetically Modified Cells to the Brain: Possibilities for the Future", *Neurosci.* 23(3):795-807 (1987).
- Selden et al., "Implantation of Genetically Engineered Fibroblasts into Mice: Implications for Gene Therapy", *Science* 236:714-718 (1987).

ART-UNIT: 189

PRIMARY-EXAMINER: Chambers; Jasmine C.

ATTY-AGENT-FIRM: Merchant, Gould, Smith, Edell, Welter and Schmidt

## ABSTRACT:

Methods of genetically modifying donor cells by gene transfer for grafting into the central nervous system to treat defective, diseased or damaged cells are disclosed. The modified donor cells produce functional molecules that effect the recovery or improved function of cells in the CNS. Methods and vectors for carrying out gene transfer and grafting are described.

74 Claims, 134 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KINC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	------	--------

☒ 3. Document ID: US 6180613 B1 Relevance Rank: 56

L12: Entry 16 of 21

File: USPT

Jan 30, 2001

US-PAT-NO: 6180613

DOCUMENT-IDENTIFIER: US 6180613 B1

TITLE: AAV-mediated delivery of DNA to cells of the nervous system

DATE-ISSUED: January 30, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kaplitt; Michael G.	New York	NY		
During; Matthew J.	Weston	CT		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
The Rockefeller University	New York	NY			02
Yale University	New Haven	CT			02

APPL-NO: 08/ 467044 [PALM]

DATE FILED: June 6, 1995

## PARENT-CASE:

RELATED APPLICATION This application is a continuation-in-part of application U.S. Ser. No. 08/227,319 filed on Apr. 13, 1994, now abandoned.

INT-CL: [07] A01 N 43/04, A61 K 31/70, C12 N 15/63, C12 N 15/00

US-CL-ISSUED: 514/44; 435/320.1, 435/455, 435/456

US-CL-CURRENT: 514/44; 435/320.1, 435/455, 435/456

FIELD-OF-SEARCH: 514/44, 435/320.1, 435/455, 435/456

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4797368</u>	January 1989	Carter	435/320
<u>5139941</u>	August 1992	Muzyczka et al.	435/172.3
<u>5173414</u>	December 1992	Lebkowski et al.	435/172.3
<u>5252479</u>	October 1993	Srivastava	435/235.1
<u>5585479</u>	December 1996	Hoke et al.	536/24.5

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 94/13788	June 1994	WO	
WO 95/13391	May 1995	WO	
WO 95/13365	May 1995	WO	
WO 95/13392	May 1995	WO	

## OTHER PUBLICATIONS

Tenenbaum et al., Meeting on Gene Transfer into Neurons, Abstract, Aug. 16-18, 1993.

Xiao et al., Advanced Drug Delivery Reviews, 12:201-215 (1993).

Jiao et al., Nature, 362:450-453 (1993).

Chatterjee et al., Methods, 5:51-59 (1993).

Chen et al., J. Cellular Biochemistry, 45:252-257 (1991).

Muzyczka, N., Current Topics in Microbiology and Immunology, 158:97-129 (1992).

Wolff et al., PNAS USA, 86:9011-9014 (1989).

Fisher et al., Neuron, 6:371-380 (1991).

Gura, Science, vol. 270, pp. 575-577, Oct. 1995.

Orkin et al., NIH Gene Therapy Meeting Report, Dec. 7, 1995.

Mandel et al., Journal of Neuroscience, vol. 18, No. 11, pp. 4271-4284, Jun. 1, 1998.

Mandel et al., Experimental Neurology, vol. 155, pp. 59-64, 1999.

Szczycka et al., Neuron, vol. 22, pp. 167-178, Jan. 1999.

During et al., Gene Therapy, vol. 5, pp. 820-827, 1998.

Klein et al., Neuroscience, vol. 90, No. 3, pp. 815-821, May 1999.

Wu et al., Society for Neuroscience Abstracts, vol. 19, No. 1-3, pp. 391, Abstract # 160.14, Nov. 7, 1993.

Isacson, O. (1995) Science 269:856-7.

Kremer et al. (1995) British Med. Bulletin 51:31-44.

Lewis, R. (1995) Genetic Eng. News 15, No. 7: cover, 17, 25.

de Fiebre et al. (1994) Neurochem. Res. 19:643-8.

During et al. (1994) Abstr. Soc. Neurosci. 20, 1465 (Abs. 602.10).

During et al. (1994) Science 266:1399-403.

Horellu et al. (1994) Neuroreport 6:49-53.

Kaplitt et al. (1994) Nature Genetics 8:148-53.

Muzyczka, N. (1994) J. Clin. Invest. 94:1351.

Roessler et al. (1994) Neurosci. Lett. 167:5-10.

Srivastava, A. (1994) Blood Cells 20:531-8.

Wu et al. (1994) Mol. Brain Res. 24:27-33.  
Akli et al (1993) Nature Genetics 3:224-228.  
Bajocchi et al (1993) 3:229-234.  
Davidson et al (1993) Nature Genetics 3:219-223.  
de Fiebre et al. (1993) Neurochem. Res. 18:1089-94.  
Flothe, et al., J. Biol. Chem., 268:3781-90 (1993).  
Flotte, et al., Proc. Nat. Acad. Sci. (USA), 90:10613-17 (1993).  
Kaplitt et al. (1993) In: Current Top. Neuroendocrinol. vol. 11, pp. 169-191.  
Le Gal La Salle et al., "An adenovirus vector for gene transfer into neurons and glia in the brain", Science 259: 988-90 (1993).  
Le Gall La Salle, G. Editorial, "Adventures with adenovirus", Nature Genetics 3:1-2 (1993).  
Neve, "Adenovirus vectors enter the brain", TIBS, 16:251-253 (1993).  
Samulski, Curr. Op. Gen. Devel., 3:74-80 (1993).  
Wolff (1993) Curr. Opin. Neurobiology 3:743-748.  
Andersen et al. (1992) Human Gene Therapy 3:487-99.  
Chatterjee, et al., Science, 258:1485-88 (1992).  
de Fiebre et al. (1992) Soc. Neurosci. Abst. 18:1-2 (Abstract 331.2).  
Federoff et al. (1992) Proc. Natl. Acad. Sci. USA 89:1636-40.  
Flotte, et al., Am. J. Respir. Cell. Mol. Biol., 7:349-56 (1992).  
Muro-Cacho, et al., J. Immunother., 11:231-237 (1992).  
Walsh, et al., Proc. Nat. Acad. Sci. (USA), 89:7257-61 (1992).  
Breakefield et al. (1991) The New Biologist 3:203-18.  
Kaplitt et al. (1991) Mol. Cellular Neurosciences 2:320-30.  
Samulski et al. (1991) EMBO J. 10:3941-50.  
Ohi et al. (1990) Gene 89:279-82.  
Palella et al. (1989) Gene 80:137-44.  
Samulski et al., J. Virol., 63:3822-28 (1989).  
Ho et al. (1988) Virology 167:279-83.  
McLaughlin et al. (1988) J. Virology 62:1963-73.  
Palella et al. (1988) Mol. Cell. Biol. 457-60.  
Allen et al. (1987) Proc. Natl. Acad. Sci. USA 84:2532-6.  
Samulski et al., J. Virol., 61:3096-101 (1987).  
Spaete et al. (1982) Cell 30:295-304.

ART-UNIT: 162

PRIMARY-EXAMINER: Chambers; Jasmine

ASSISTANT-EXAMINER: Martin; Jill D.

ATTY-AGENT-FIRM: Klauber & Jackson

ABSTRACT:

The invention relates to a method of delivering exogenous DNA to a target cell of the mammalian central nervous system using an adeno-associated virus (AAV)-derived vector. Also included in the invention are the AAV-derived vectors containing exogenous DNA which encodes a protein or proteins which treat nervous system disease, and a method of treating such disease.

15 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KMAC	Draw D
------	-------	----------	-------	--------	----------------	------	-----------	--------	------	--------

L12: Entry 13 of 21

File: USPT

Jan 27, 2004

US-PAT-NO: 6683058

DOCUMENT-IDENTIFIER: US 6683058 B1

TITLE: Methods for therapy of neurodegenerative disease of the brain

DATE-ISSUED: January 27, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tuszynski; Mark H.	La Jolla	CA		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Regents of the University of California	Oakland	CA			02

APPL-NO: 09/ 620174 [PALM]

DATE FILED: July 19, 2000

## PARENT-CASE:

RELATED U.S. PATENT APPLICATIONS This is a continuation-in-part of, and claims the priority of, U.S. patent application, Ser. No. 09/060,543, which was filed on Apr. 15, 1998, now U.S. Pat. No. 6,451,306.

INT-CL: [07] A01 N 43/04, A01 N 63/00, C12 N 15/00, C12 N 15/63, C07 H 21/04

US-CL-ISSUED: 514/44; 435/320.1, 435/455, 424/93.2, 424/93.21, 536/23.5

US-CL-CURRENT: 514/44; 424/93.2, 424/93.21, 435/320.1, 435/455, 536/23.5

FIELD-OF-SEARCH: 514/44, 435/320.1, 435/455, 424/93.2, 424/93.21, 536/23.5

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5082670</u>	January 1992	Gage et al.	424/520
<u>5529774</u>	June 1996	Barba et al.	424/93.21
<u>5650148</u>	July 1997	Gage et al.	424/93.2
<u>5683695</u>	November 1997	Shen et al.	424/185.1
<u>5756312</u>	May 1998	Weiner et al.	435/69.3
<u>5762926</u>	June 1998	Gage et al.	424/93.21

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 90/06757	June 1990	WO	



WO 97/39629	October 1997	WO
WO 98/32869	July 1998	WO
WO 98/49308	November 1998	WO
WO 98/56404	December 1998	WO
WO 99/00148	January 1999	WO
WO 99/49014	September 1999	WO

## OTHER PUBLICATIONS

Deonarain; Ligand-targeted receptor-mediated vectors for gene delivery, 1998, Exp. Opin. Ther. Patents 8: 53-69.\*

Verma et.al.; Gene therapy--promises, problems and prospects, 1997, Nature, vol. 389: 239-242.\*

Eck et.al.; Gene-Based Therapy, 1996, Pharmacological Basis of Therapeutics: 77-101.\*

Gorecki; Prospects and problems of gene therapy: an update, 2001, Expert Opin. Emerging Drugs 6(2): 187-198.\*

Armelin et al., "Pituitary extracts and steroid hormones in the control of 3T3 cell growth" Proc. Natl. Acad. Sci. (1973) 70:2702-6.

Banerji et al., "Expression of a beta-globin gene in enhanced by remote SV40 DNA sequences" Cell (1981) 27:299-308.

Benoist et al., "In vivo sequence requirements of the SV40 early promoter region" Nature (1981) 290:304-10.

Blesch et al., "Ex vivo gene therapy for Alzheimer's disease and spinal cord injury" Clinical Neuroscience (1996) 3:268-274.

Borsani et al., "cDNA sequence of human beta-NGF" Nucleic Acids Res. (1990) 18:4020.

Breathnach et al., "Organization and expression of eucaryotic split genes coding for proteins" Ann. Rev. Biochem. (1981) 50:349-83.

Chen et al., "Calcium phosphate-mediated gene transfer: a highly efficient transfection system for stably transforming cells with plasmid DNA" BioTechniques (1988) 6:632-8.

Chen et al., "High-efficiency transformation of mammalian cells by plasmid DNA" Mol. Cell. Biol. (1987) 7:2745-52.

Chua et al., "Tumor necrosis factor-alpha induces mRNA for collagenase and TIMP in human skin fibroblasts" Connect. Tissue Res. (1990) 25:161-170.

Conner et al., "Distribution of NGF delivered into the rat CNS by either grafted NGF-secreting fibroblasts, intraparenchymal (IP) injections, or IP-infusions" Society for Neuroscience (1997) 23:53 Abstract 29.5.

Corden et al., "Promoter sequences of eukaryotic protein-coding genes." Science (1980) 209:1406-14.

DePamphilis et al., "Microinjecting DNA into mouse ova to study DNA replication and gene expression and to produce transgenic animals" BioTechniques (1988) 6:662-80.

de Wet et al., "The mRNAs for the pro-alpha 1(I) and pro-alpha 2(I) chains of type I procollagen are translated at the same rate in normal human fibroblasts and in fibroblasts from two various of osteogenesis imperfecta with altered steady state ratios of the two mRNAs" J. Biol. Chem. (1983) 258:14385-9.

Elias et al., "Regulation of human lung fibroblast collagen production by recombinant interleukin-1, tumor necrosis factor, and interferon-gamma" Ann. N.Y. Acad. Sci. (1990) 580:233-244.

Felgner et al., "Cationic liposome mediated transfection" Proc. West. Pharmacol. Soc. (1989) 32:115-21.

Felgner et al., "Cationic liposome mediated transfection" Focus. (1989) 11:21-25.

Felgner et al., "Lipofection: a highly efficient, lipid-mediated DNA-transfection procedure" Proc. Natl. Acad. Sci. (1987) 84:7413-7.

Fraley et al., "New generation liposomes: the engineering of an efficient vehicle for intracellular delivery of nucleic acids" Trends Biochem. Sci. (1981) 6:77-80.

Fromm et al., "Deletion mapping of DNA regions required for SV40 early region

- promoter function in vivo" J. Mol. Appl. Genet. (1982) 1:457-81.
- Gruss et al., "Simian virus 40 tandem repeated sequences as an element of the early promoter" Proc. Natl. Acad. Sci. (1981) 78:943-7.
- Hefti et al., "Nerve growth factor and Alzheimer's disease" Ann. Neurol. (1986) 20:275-81.
- Higgins et al., "NGF receptor gene expression is decreased in the nucleus basalis in Alzheimer's disease" Exp. Neurol. (1989) 106:222-36.
- Horellou et al., "Adenovirus-mediated gene transfer to the central nervous system for Parkinson's Disease" Experimental Neurobiology (1997) 144:131-8.
- Jolly et al., "Elements in the long terminal repeat of murine retroviruses enhance stable transformation by thymidine kinase gene" Nucleic Acids Res. (1983) 11:1855-1872.
- Kobayashi et al., "Morphometric study on the CH<sub>5</sub> of the nucleus basalis of Meynert in Alzheimer's disease" Mol. Chem. Neuropathol. (1991) 15:193-206.
- Kordower et al., "The aged monkey basal forebrain: Rescue and sprouting of axotomized basal forebrain neurons after grafts of encapsulated cells secreting human nerve growth factor" Proc. Natl. Acad. Sci. (1994) 91:10898-10902.
- Lehericy et al., "Heterogeneity and selectivity of the degeneration of cholinergic neurons in the basal forebrain of patients with Alzheimer's disease" J. Comp. Neurol. (1993) 330:15-31.
- Levivier et al., "Intrastriatal implantation of fibroblasts genetically engineered to produce brain-derived neurotrophic factor prevents degeneration of dopaminergic neurons in a rat model of Parkinson's disease" The Jo. Of Neuroscience (1995) 15:7810-20.
- Mannino et al., "Liposome mediated gene transfer" Biotechniques (1988) 6:682-90.
- Maxam et al., "Sequencing end-labeled DNA with base-specific chemical cleavages" Methods in Enzymology (1980) 65:499-560.
- McCutchan et al., "Enhancement of the infectivity of simian virus 40 deoxy ribonucleic acid with diethylaminoethyl dextran" J. Natl. Cancer Inst. (1968) 41:351-7.
- Messing et al., "A system for shotgun DNA sequencing" Nucleic Acids Res. (1981) 9:309-21.
- Mesulam et al., "Cholinergic innervation of cortex by the basal forebrain: cytochemistry and cortical connections of the septal area, diagonal band nuclei, nucleus basalis (substantia innominata), and hypothalamus in the rhesus monkey." J. Comp. Neurol. (1983) 214:170-197.
- Moreau et al., "The SV40 72 base repair repeat has a striking effect on gene expression both in SV40 and other chimeric recombinants" Nucleic Acids Res. (1981) 9:6407-6068.
- Mufson et al., "Loss of nerve growth factor receptor-containing neurons in Alzheimer's disease: A quantitative analysis across subregions of the basal forebrain" Exp. Neurol. (1989) 105:221-32.
- Mufson et al., "Nerve growth factor receptor expressing human basal forebrain neurons: pathologic alterations in Alzheimer's and Parkinson's disease" Prog. Clin. Biol. Res. (1989) 317:401-14.
- Palmer et al., "Genetically modified skin fibroblasts persist long after transplantation but gradually inactivate introduced genes" Proc. Natl. Acad. Sci (1991) 88:1330-4.
- Potter et al., "Electroporation in biology: methods, applications, and instrumentation" Anal. Biochem. (1988) 174:361-73.
- Prockop et al., "Heritable diseases of collagen" N. Eng. J. Med. (1984) 311:376-86.
- Raymon et al., "Application of ex vivo gene therapy in the treatment of Parkinson's disease" Experimental Neurobiology (1997) 144:82-91.
- Rossi et al., "Identification of a cell-specific transcriptional enhancer in the first intron of the mouse alpha 2 (type I) collagen gene" Proc. Natl. Acad. Sci. (1987) 84:5590-4.
- Schmidt et al., "Regulation of a collagen promoter by the product of viral mos oncogene" Nature (1985) 314:286-9.
- Seliger et al., "Gamma interferon regulates long terminal repeat-controlled

oncogene expression in transformed mouse fibroblasts at the level of mRNA transcription" J. Virology (1988) 62:619-21.

Seliger et al., "Tumor necrosis factor-alpha affects LTR-controlled oncogene expression in transformed mouse fibroblasts at the post-transcriptional level" J. Immunol. (1988) 141:2138-44.

Shivaloff et al., "Lines of therapeutic research in Alzheimer's disease" Psychopharmacology Bulletin (1996) 32:343-52.

Smith et al., "Age-associated neuronal atrophy occurs in the primate brain and is reversible by growth factor gene therapy" Proc. Natl. Acad. Sci. (1999) 96:10893-8.

Smith et al., "Characterization of collagen synthesized by normal and chemically transformed rat liver epithelial cell lines" Biochem. (1980) 19:1820-5.

Toneguzzo et al., "Electric field-mediated DNA transfer: transient and stable gene expression in human and mouse lymphoid cells" Molec. Cell. Biol. (1986) 6:703-6.

Tuszynski et al., "Gene therapy in the adult primate brain: intraparenchymal grafts of cells genetically modified to produce nerve growth factor prevent cholinergic neuronal degeneration" Gene Therapy (1996) 3:305-14.

Tuszynski et al., "Recombinant human nerve growth factor infusions prevent cholinergic neuronal degeneration in the adult primate brain" Ann. Neurol. (1991) 30:625-36.

Tuszynski et al., "Somatic gene therapy for nervous system disease" Ciba Foundation Symposium 196, Growth factors as drugs for neurological and sensory disorders (1996) 196:85-97.

Tuszynski et al., "The chronically injured spinal cord exhibits responsiveness to NGF delivered locally by gene therapy" Society for Neuroscience (1995) 21:1562 Abstract 613.3.

Ullrich et al., "Human beta-nerve growth factor gene sequence highly homologous to that of a mouse" Nature (1983) 303:821-5.

Wolff et al., "Expression of retrovirally transduced genes in primary cultures of rat hepatocytes" Proc. Natl. Acad. Sci. (1987) 84:3344-8.

Kojima, et al., "Adenovirus-Mediated transduction with human glial cell line-derived neurotrophic factor gene prevents 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine-induced dopamine depletion in striatum of mouse brain," Biochemical and Biophysical Research Communications, 238:569-573 (1997).

Roberts, et al., "Effects of NGF-Secreting Genetically Modified Cell Grafts on Cholinergic Neuronal Morphology and Cognition in Aged Primates," Soc. For Neuroscience Abstracts, 21(2):613.8 (1995).

Yang, et al., "Gene Therapy for Central Nervous System Injury: The Use of Cationic Liposomes: An Invited Review," Journal of Neurotrauma, 14(5):281-297 (1997).

Zlokovic, et al., "Cellular and Molecular Neurosurgery: Pathways From Concept to Reality--Part II: Vector Systems and Delivery Methodologies for Gene Therapy of The Central Nervous System," Neurosurgery, 40(4):805-813 (1997).

Tuszynski et al., "Targeted intraparenchymal Delivery of Human NGF by Gene Transfer to the Primate Basal Forebrain for 3 Months Does Not Accelerate .beta.-Amyloid Plaque Disposition," Experimental Neurology, Article No. EN986956 1-10 (1998).

Grill, et al., "Cellular delivery of neurotrophin-3 promotes corticospinal axonal growth and partial functional recovery after spinal cord injury," Journal of Neuroscience, 17(14):5560-5572 (1997).

Tuszynski, et al., "Functional characterization of NGF-secreting cell grafts to the acutely injured spinal cord," Cell Transplantation, 6(3):361-368 (1997).

ART-UNIT: 1632

PRIMARY-EXAMINER: Chen; Shin-Lin

ATTY-AGENT-FIRM: Foley & Lardner

ABSTRACT: